

What is claimed is:

1 1. A method for filtering a received signal in a wireless receiver,
2 comprising:

3 providing a received signal to an amplifier; and
4 inverting the impedance of the received signal at the output of the amplifier
5 using an inductance.

1 2. The method of claim 1, further comprising inverting the impedance of
2 the received signal at the output of the amplifier using a voltage controlled current
3 source to transform the inductance applied to the received signal to a capacitance.

1 3. The method of claim 2, further comprising implementing the voltage
2 controlled current source as a pair of transconductance amplifiers.

1 4. The method of claim 3, further comprising implementing the
2 inductance at the output of the amplifier using a pair of voltage controlled current
3 sources and a capacitance.

1 5. A low-noise filter for a wireless receiver, comprising:
2 an amplifier; and
3 an impedance inverter configured to transform inductance applied to a received
4 signal to a capacitance.

1 6. The low-noise filter of claim 5, wherein the impedance inverter further
2 comprises an inductor coupled to the output of the amplifier.

1 7. The low-noise filter of claim 6, wherein the impedance inverter further
2 comprises:
3 a pair of transconductance amplifiers; and
4 at least one capacitance coupled to the output of one of the transconductance
5 amplifiers.

1 8. The low-noise filter of claim 7, wherein the impedance inverter
2 removes direct current (DC) offset present at the input of the amplifier.

1 9. A portable transceiver, comprising:
2 a modulator configured to receive and modulate a data signal;
3 an upconverter configured to receive the modulated data signal and provide a
4 radio frequency (RF) signal;
5 a transmitter configured to transmit the RF signal; and
6 a direct conversion receiver including an amplifier, a filter and an impedance
7 inverter configured to transform inductance applied to a received signal to a
8 capacitance.

1 10. The portable transceiver of claim 9, wherein the impedance inverter
2 further comprises an inductor coupled to the output of the amplifier.

1 11. The portable transceiver of claim 10, wherein the impedance inverter
2 further comprises:
3 a pair of transconductance amplifiers; and
4 at least one capacitance coupled to the output of one of the transconductance
5 amplifiers.

1 12. The portable transceiver of claim 11, wherein the impedance inverter
2 removes direct current (DC) offset present at the input of the amplifier.

1 13. A portable transceiver, comprising:
2 means for modulating a data signal;
3 means for upconverting the modulated data signal and provide a radio
4 frequency (RF) signal;
5 means for transmitting the RF signal;
6 means for converting a received signal to a baseband signal;
7 means for amplifying the baseband signal; and
8 means for inverting the impedance of the received signal at the output of the
9 amplifying means to transform inductance applied to a received signal to a
10 capacitance.

1 14. The portable transceiver of claim 13, further comprising voltage
2 controlled current source means for inverting the impedance of the received signal at
3 the output of the amplifier to transform the inductance applied to the received signal to
4 a capacitance.

1 15. A system for removing direct current (DC) offset from a received
2 signal, comprising:
3 a variable gain amplifier configured to provides a received radio frequency (RF)
4 signal; and
5 a gyrator-generated inductance applied at the output of the variable gain
6 amplifier, the gyrator-generated inductance configured to transform inductance present
7 at the output of the variable gain amplifier to a capacitance.

1 16. The system of claim 15, wherein the gyrator-generated inductance adds
2 a high pass filter pole to the variable gain amplifier.

1 17. The system of claim 15, wherein the gyrator-generated inductance
2 shunts excess DC current present at the output of the variable gain amplifier to ground.

1 18. The system of claim 15, wherein, at a frequency above a high-pass
2 cutoff frequency, the gyrator-generated inductance appears as a high impedance at the
3 output of the variable gain amplifier.